

# 2011 Current Environmental Issue

## Salt and Fresh Water Estuaries

Salt water estuaries are semi-enclosed areas where sea water and freshwater mix. Freshwater estuaries are regions where lake and river waters mix. Estuaries are among the most productive ecosystems on earth and have been considered by some to be second only to the rainforests in productivity. They also are important as a first line of defence against the destructive power of the oceans caused by hurricanes, tropical storms, strong gales, high tides, and other natural disturbances. New Brunswick borders the southern Gulf of St. Lawrence which has been called one large estuary. Many of the coastal estuaries in New Brunswick are sheltered by sand dunes, bays, harbours, and salt marshes. These systems are driven mainly by fresh water runoff and tidal influences of the saltwater resulting in rich and diverse aquatic and terrestrial ecosystems.

As an example, one of the largest estuarine areas in Eastern Canada is the Tantramar Salt Marshes, located adjacent to the 2011 Canon Envirothon base in Sackville, New Brunswick, Canada. Estuaries in New Brunswick as in other parts of North America are under pressure for habitation, industrial uses, and recreation. Since Acadian settlers arrived from France in the mid 1500's, the Tantramar marshes and estuaries have been dyked, drained for farming and even mined for salt. Even prior to this the Mi'kmaq First Nations used these lands for bird hunting, shellfish gathering and fishing, sometimes modifying streams and drainages to facilitate their gathering.

Despite these changes, these estuarine marshlands still provide valuable ecosystem functions such as habitat for wildlife, a place for hundreds of marine organisms to spawn, filter sediments and pollutants, and acting as a buffer between land and ocean by absorbing floodwaters and dissipating storm surges.

## 2011 Learning Objectives

### Envirothon 2011 Salt and Fresh Water Estuaries Learning Objectives

1. Describe and classify different estuaries and explain the difference between a fresh and a salt estuary.
2. Compare and contrast the different fresh water and salt estuarine habitats.
3. Describe the unique features and signs of a healthy salt marsh and estuary.
4. Familiarize yourself with the historical and cultural importance of estuaries in eastern Canada.

5. Compare and contrast reasons why salt and fresh water estuaries are important economically, ecologically and socially.
6. Examine the anthropogenic and environmental impacts upon estuaries and the methods being used to mitigate these impacts.
7. Discuss the merits of returning some or all of the marsh to its original state versus maintaining the dykes and water controls that were installed to permit agriculture.
8. Identify and describe various fresh water and salt estuarine flowering plants, seaweeds and animals.
9. Explain how plants and animals have adapted to the physical and chemical features of a salt estuary.
10. Familiarize yourself with the provincial, federal and territorial laws and regulations for the protection of marine areas in Canada.
11. Describe the effects inland activities have on estuaries. Explain how the activities in the estuary may possibly affect the inland waters?